Bean

HCI 440: Introduction to User Centered Design

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About Bean
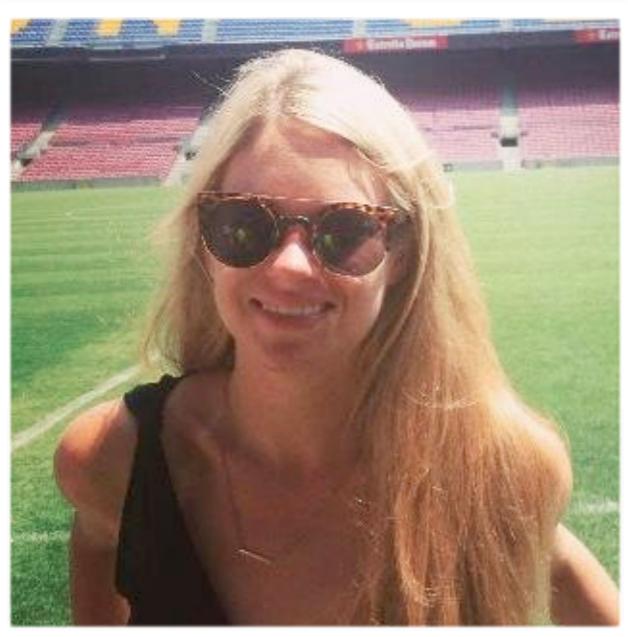
Bean

Many times, coffee shops are not streamlined for the amount of traffic they receive. This unmet need results in congestion and frustration among users throughout all phases of the coffee cycle, -- from ordering and purchasing their beverage, to waiting for their name to be called once the beverage is ready. This is especially true when users fall out of line or don't hear their name being called to pick up their drink.

Bean helps solve this. Let us tell you how.

But First Thing's First: User Stories + Contextual Inquiry

Mackenzie Porter

age	27
occupation	Associate Account Planner

We met with Mackenzie and followed her through her morning coffee routine while asking her questions and documenting the process with photos. By doing this with other participants, as well, it gave us an idea of problems that seemed to crop up in the coffee ordering space.
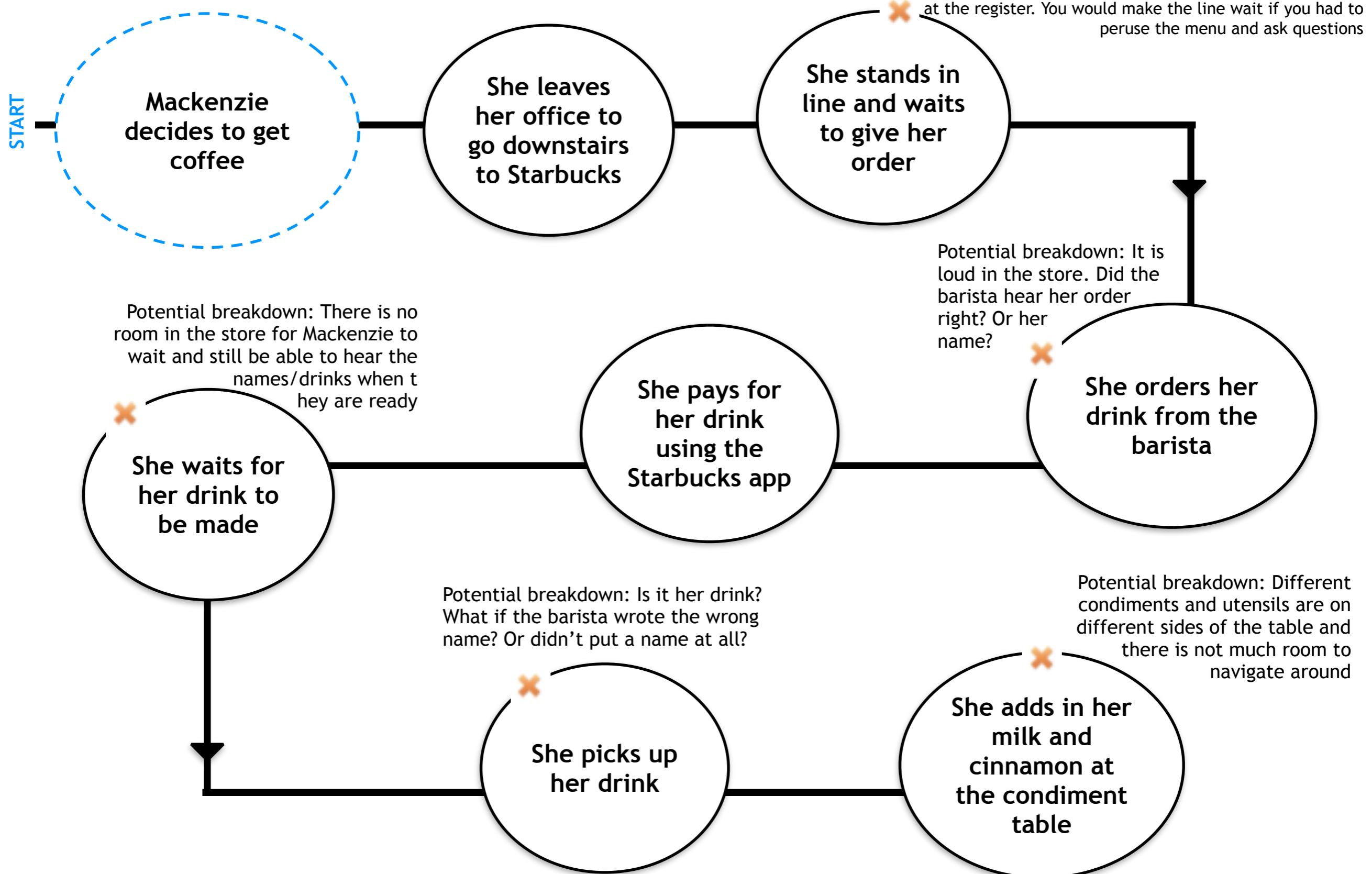
Goals/Motivations
To get coffee to start the day with energy. Mackenzie works out in the morning and by the time she gets to work she needs an extra boost
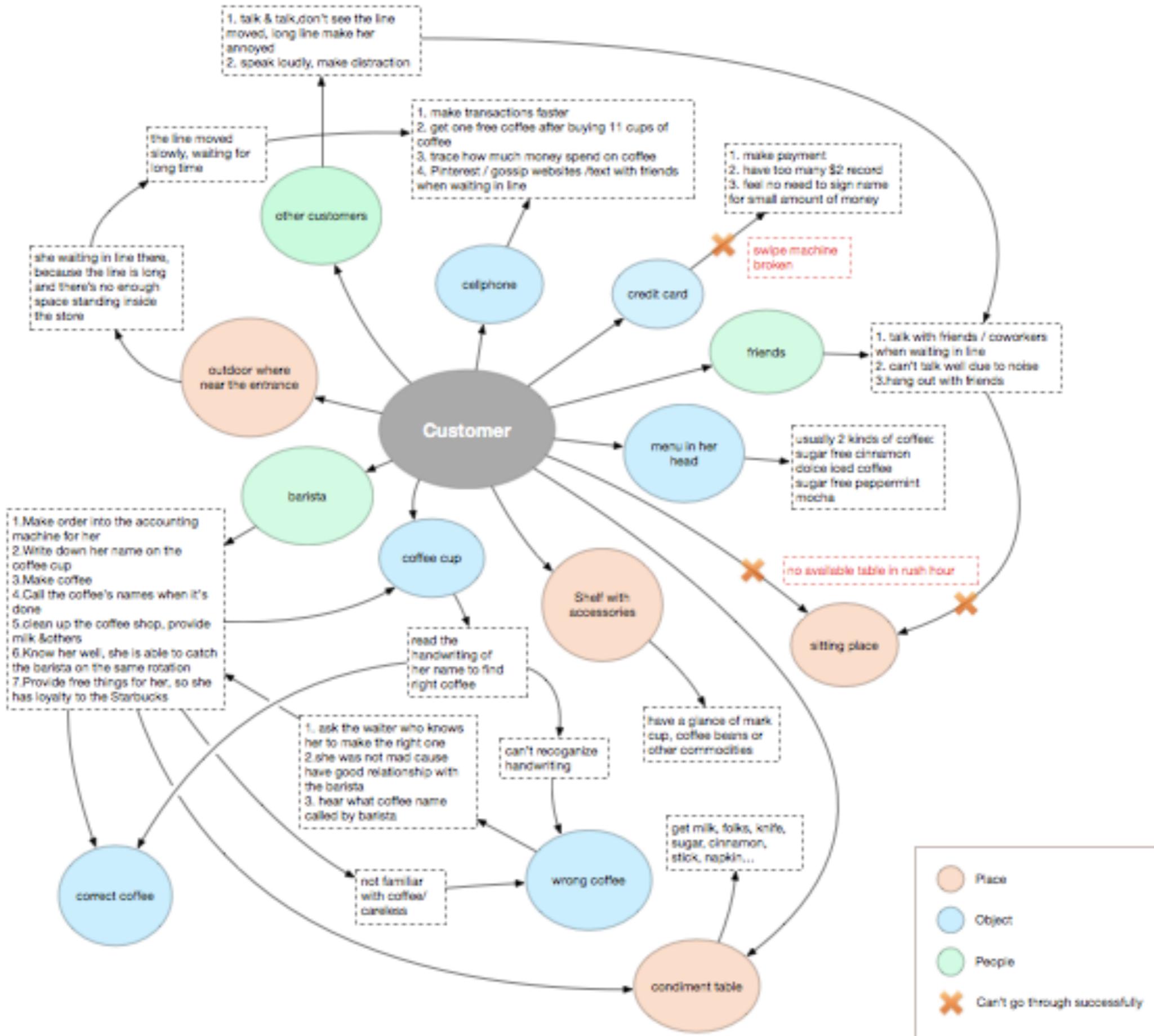
Frustrations & Pain Points
Long lines, baristas getting her drink order wrong

Sequence Flow

START

Mackenzie decides to get coffee

She leaves her office to go downstairs to Starbucks

She stands in line and waits to give her order

Potential breakdown: Had Mackenzie not known what she wanted to drink, the menu was illegible until you were up at the register. You would make the line wait if you had to peruse the menu and ask questions

Potential breakdown: It is loud in the store. Did the barista hear her order right? Or her name?

She orders her drink from the barista

She pays for her drink using the Starbucks app

Potential breakdown: There is no room in the store for Mackenzie to wait and still be able to hear the names/drinks when they are ready

She waits for her drink to be made

Potential breakdown: Is it her drink? What if the barista wrote the wrong name? Or didn't put a name at all?

She picks up her drink

She adds in her milk and cinnamon at the condiment table

Potential breakdown: Different condiments and utensils are on different sides of the table and there is not much room to navigate around

Flow Model

other customers

1. talk & talk, don't see the line moved, long line make her annoyed
2. speak loudly, make distraction

the line moved slowly, waiting for long time

1. make transactions faster
2. get one free coffee after buying 11 cups of coffee
3. trace how much money spend on coffee
4. Pinterest / gossip websites /text with friends when waiting in line

1. make payment
2. have too many $2 record
3. feel no need to sign name for small amount of money

she waiting in line there, because the line is long and there's no enough space standing inside the store

swipe machine broken

cellphone

credit card

friends

1. talk with friends / coworkers when waiting in line
2. can't talk well due to noise
3. hang out with friends

outdoor where near the entrance

Customer

menu in her head

usually 2 kinds of coffee: sugar free cinnamon dolce iced coffee sugar free peppermint mocha

barista

coffee cup

Shelf with accessories

no available table in rush hour

sitting place

1. Make order into the accounting machine for her
2. Write down her name on the coffee cup
3. Make coffee
4. Call the coffee's names when it's done
5. clean up the coffee shop, provide milk &others
6. Know her well, she is able to catch the barista on the same rotation
7. Provide free things for her, so she has loyalty to the Starbucks

read the handwriting of her name to find right coffee

have a glance of mark cup, coffee beans or other commodities

1. ask the waiter who knows her to make the right one
2. she was not mad cause have good relationship with the barista
3. hear what coffee name called by barista

can't recognize handwriting

get milk, folks, knife, sugar, cinnamon, stick, napkin...

correct coffee

not familiar with coffee/ careless

wrong coffee

condiment table

Place

Object

People

Can't go through successfully

Persona Affinity Diagram

Proximity

Proximity

She goes to different coffee shops depending on the weather outside. If the weather is bad, than she'll stay closer to home.

Starbucks: In work building - pop down to get coffee quickly to take a break from work

Starbucks: 2 blocks away from work building - Longer breaks, to get away from coworkers

Waiting in line: Really needs a break from work, sitting. She needs to move around.

Has a different coffee routine on mornings in which she visits the gym before work

Because the Starbucks is just downstairs from her office, she goes to the Starbucks nearly every morning and sometimes in the afternoon... more...

this Starbucks is the coffee shop she goes most , cause it's close to work place

Pret-a-Manger: Inside target - small store - Grabs a drink while shopping

Starbucks: Usually no lounge - not conducive to hanging out

Weekday: Usually on a schedule with work

Goals/Motivations

Environment

Starbucks: Doesn't like the loud music playing - not conducive to hanging out

But then it is hard to talk to people in line because of the noise

She is easily distractible

Lavazza: Machines seem quieter than Starbucks.

Argo tea: Sits upstairs in the lounge

Talking with her friends, but the communication did not go well due to the loud noise made by other customers in the rush... more...

Argo tea: More social atmosphere

Argo tea: Meet with friends

Starbucks: "To go" coffee, "commuter" coffee

She also enjoys ambient noise in coffee shops.

Beverage Choice

sometimes may try new beverage when it's launched in market

Beverage Choice: Venti Rooibos Hot Tea, her usual beverage at Starbucks

Vacillates between two drinks -- sugar free cinnamon dolce iced coffee; sugar free peppermint mocha

she orders iced coffee most, and also order hot coffee in train or in cold weather

Beverage Choice: On occasion seasonal drinks such as Pumpkin Spice Lattes and Peppermint Mochas

she expect keep awake and low calorie from the beverage.

Weekend: When there are too many time constrains and too many things to do - Coffee At home

iced coffee without sugar and cream is her favorite, cause she want to lose fat, and iced coffee has low calories

buying 11 cups of coffee will get one cup of coffee for free, and she has already got lots of free coffee so far.

Beverage Choice: Creature of habit - doesn't like new drinks and doesn't like risking not liking new drinks ... more...

Employees

Argo and Pret-a-Manger: Baristas change too often and they don't know them.

Baristas at Starbucks know her name, feels loyal to the baristas she knows

Weekday: She frequents Starbucks around the same times so she's able to catch baristas on the same rotation. She has a... more...

Receiving drink: Baristas usually know her (have a personal relationship with her) and what her drink is, and they make her drink

Purchasing: I don't know if the tip that I add goes to the waiters or not.

She has less of a sense of loyalty to other starbucks because she gets free things at this one

Important Tools/Objects

Payment

App

Purchasing: App - Enjoys because it lets her manage her payments

Purchasing: App has an auto reload option if the balance falls under $10

Prefers to pay with the Starbucks mobile app -- earns rewards

Purchasing: The app is "quick and convenient"

Purchasing: App - You can also get people gifts. Thinks that's a cool feature.

Prefers to pay with the Starbucks mobile app -- makes the transaction faster

Likes using starbucks app because she gets annoyed with so many $2 purchases on her statement. She gets... more...

Purchasing: App - Integrated with iPhone (Passbook), but doesn't know how that's beneficial to her.

Purchasing: App - A lot of the parts of the app don't work

Purchasing: App - She figures out how to work some of the parts she mentioned weren't working

Credit Card

Purchasing: Other places use Credit Cards

Purchasing: CC - Doesn't understand why she should have to sign a receipt for a low amount of money. "This is...

Purchasing: CC - Purchasing is usually efficient in most coffee shops.

Purchasing: CC - No traceability of how much money I spend on coffee. Really enjoys budgeting with the app.

Cell Phone

Waiting in line: Checking email

usually play with cellphone while waiting in line

Waiting in line: Checking Pinterest

Waiting in line: I browse my phone because there's nothing interesting on the walls of Starbucks.

Uses time in coffee line to check gossip websites on her phone

Waiting in line: Texting because I need to catch up on talking with friends/responding to messages because I don't... more...

Uses phone while waiting in line despite visiting Starbucks with a friend or colleague

Friends

If she isn't alone she doesn't spend as much time on her phone.

Sometimes she need to move bodies back and forward in order to see friends and talk, because they all stand in line.

Waiting in line: On weekdays she is usually with a friend, catching up on office issues or making other small talk

Inefficiencies

Incorrect Coffee

If coffee is incorrect and she doesn't know the baristas, she typically does not ask for a new drink

Has been given wrong coffee before. They might do the wrong syrup or once she was given tea instead

Brings incorrect coffee back to the baristas she knows to ask for a new drink

Line too long

She usually spend 20 min buy coffee, and worries that her boss will be mad if she spend too much time leaving her work ... more...

At times chooses different coffee option if the line at Starbucks is too long

After purchase, she thinks that waiting in line cost most time.

She hates when there are large groups ahead of her. They just talk and talk and then dont see that the line has moved

If there is an application help her to know how many people are in the coffee shop right now, it would be better. She can... more...

Name (Alert Process)

Sometimes she can't read barista's handwriting of her name on the coffee cup.

she doesn't feel uncomfortable telling barista her name when she makes order.

It is helpful when the baristas take her name, even when spelled wrong

When names aren't taken and drink orders are just yelled, it creates confusion

Always gives her real name. They usually spell it wrong but she thinks it's funny and doesnt get offended

she made mistake when ordering food. cause there's no her name written on food package and lots of people love... more...

Personas and User Testing Participants

Persona 1

Siobhan Callahan

" *I'm always busy and on the go, both on weekdays and weekends. I want to get my coffee on my own terms, and then move along with my day.* "

age	30
occupation	senior interactive designer
education	bachelor's degree
level of computer comfort	very high
important tools	smartphone with mobile apps, credit card, friends/colleagues

Siobhan is a busy, 30 year-old living in an urban city. She is well-established in her career as a senior interactive designer at a large advertising and often works late nights and even some weekends to meet client demands. Her workload frequently leaves Siobhan feeling a bit drained and pressed for time.

In so, she has come to frequent coffee shops for the extra boost of energy she needs to get her day started; however, she often feels frustrated waiting in long lines to partake in the traditional coffee shop experience. In addition, the baristas very rarely get Siobhan's name correct when she orders. To combat the issue, she has started to tell the coffee shop employees that her name is "Shavon" or even "S" at times.

In paying for her beverage, Siobhan is an advocate for mobile payment (scanning a barcode within Passbook on her iPhone), and in using this method, she has earned rewards which occasionally allow her to receive free food and drinks at her favorite coffee shop. In addition to this, she has fostered a rapport with the baristas near her work that she sees most often; they too reward her with free items from time to time, which has incentivized Siobhan to remain loyal to this coffee shop whenever possible.

Goals/Motivations
Finding a coffee shop within close proximity (near her office or on route to her task), with an enjoyable ambiance that's not too loud, that also offers her beverage of choice — iced coffee, even in the dead of winter

Frustrations & Pain Points
Name misspelling and mispronunciation, long lines, having to pay with her credit card instead of a mobile app

Persona 2

Kelsey Miller

"*I frequently visit coffee shops on weekends when I'm studying or completing homework assignments. I like the ambiance and the feeling of being around other students.*"

age	25
occupation	graduate student
education	bachelor's degree
level of computer comfort	medium
important tools	smartphone, wallet, credit card, computer, other students

Kelsey is a 25 year-old graduate student living in a college town. She is currently working toward earning her Master's in education. Despite being on a budget, Kelsey allows herself to indulge in visiting coffee shops on weekends while she studies. She enjoys surrounding herself with other students who are studying and feels that she is more productive when she is outside of her apartment.

Because Kelsey is living in a medium-sized college town, her options are limited when it comes to her choice of coffee shops on campus. She typically divides her time between Starbucks, Peet's Coffee and Tea, or Java House. These establishments are often crowded, and if she is unable to find a place to sit down with her computer, she will look for a different coffee shop with more available space.

Since she typically spends a significant chunk of her Saturday and Sunday at a coffee shop, she tries to find locations that serve food and pastries in addition to just coffee and tea; however, when she is completely immersed in studying she often struggles to hear her name being called to signify that the food and/or beverage she ordered is ready for pick up.

Goals/Motivations
Being surrounded by other students, casual ambiance, a location that offers food and pastries in addition to coffee and tea

Frustrations & Pain Points
Overcrowding, being unable to find a place to sit and study, not hearing her name being called when her food or beverage is ready

Our User Testing Participants

20-25 years: **2 users**

26-30 years: **5 users**
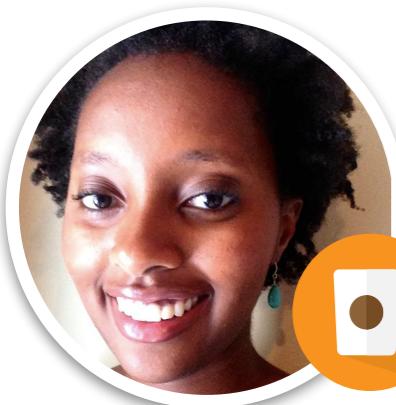
31-35 years: **1 user**

Occupations included:

- media analyst
- account planner
- media strategist
- UX intern
- graduate student
- planning supervisor
- brand content manager

Our User Testing Participants, continued
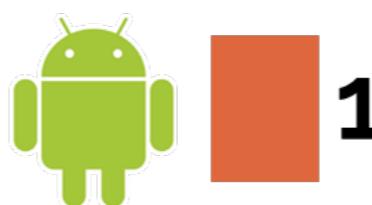
Device ownership:
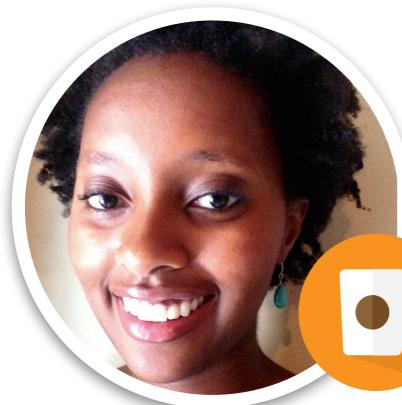
own a smartphone?
100%
"yes"

iPhone vs. Android:

7

1
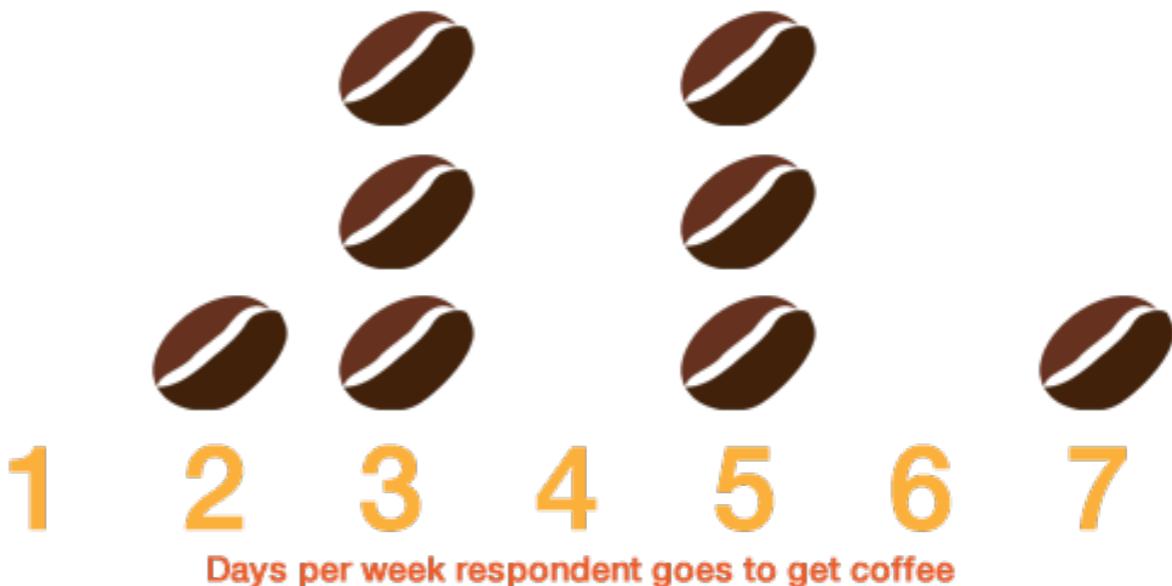
Our User Testing Participants, continued

Coffee purchasing habits:

1 2 3 4 5 6 7

Days per week respondent goes to get coffee

Perceived 'busy-ness'*:

*on a typical week, how would you rate your level of activity

(likert scale: 1 being not busy; 10 being extremely busy)

7.43/10

Our Prototypes

Physical Prototype
Phase 1

original wearable prototype:

- leveraged user gesture to power-on

- only projected one beverage at a time

- one button, unlabeled - send coffee to iBeacon within coffee shop

- three internal functions: iBeacon, accelerometer/gyroscope, haptic user feedback (vibration)

Physical Prototype
Phase 2

wearable prototype utilized in-class:

- still utilizes user gesture to power-on

- still has one button to send coffee to coffee shop

- broadened projection to feature three pre-programmed beverages at a time (user to rotate hand forward and backward to scroll through beverages)

- added red background indicator to signal that the device is powering off

Physical Prototype
Phase 3

**wearable prototype utilized
during user testing:**

- replaced user gesture power-on with a true button

- added power icon and 'SEND' copy to buttons to convey functionality
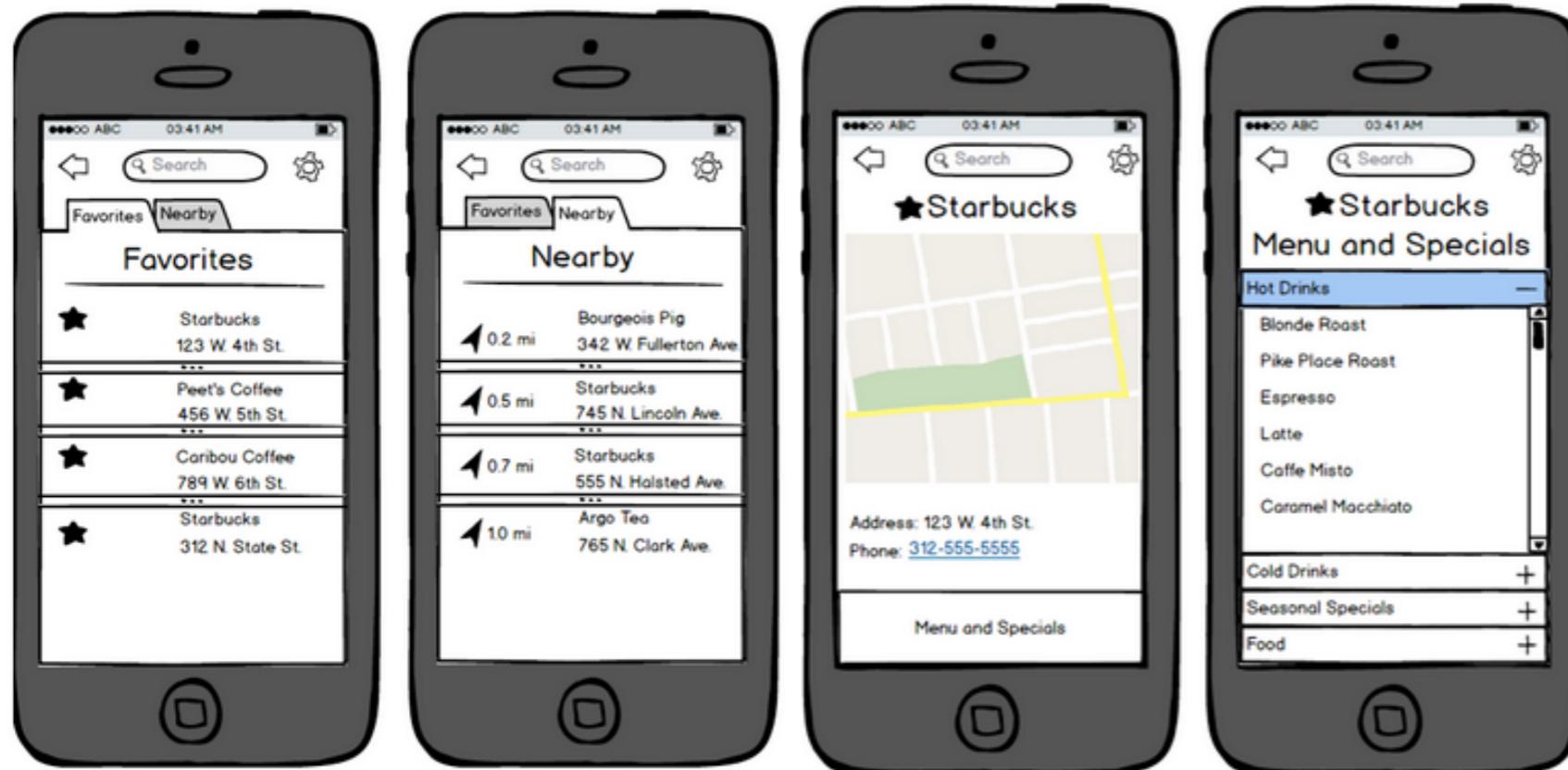
Digital Prototype
Phase 1
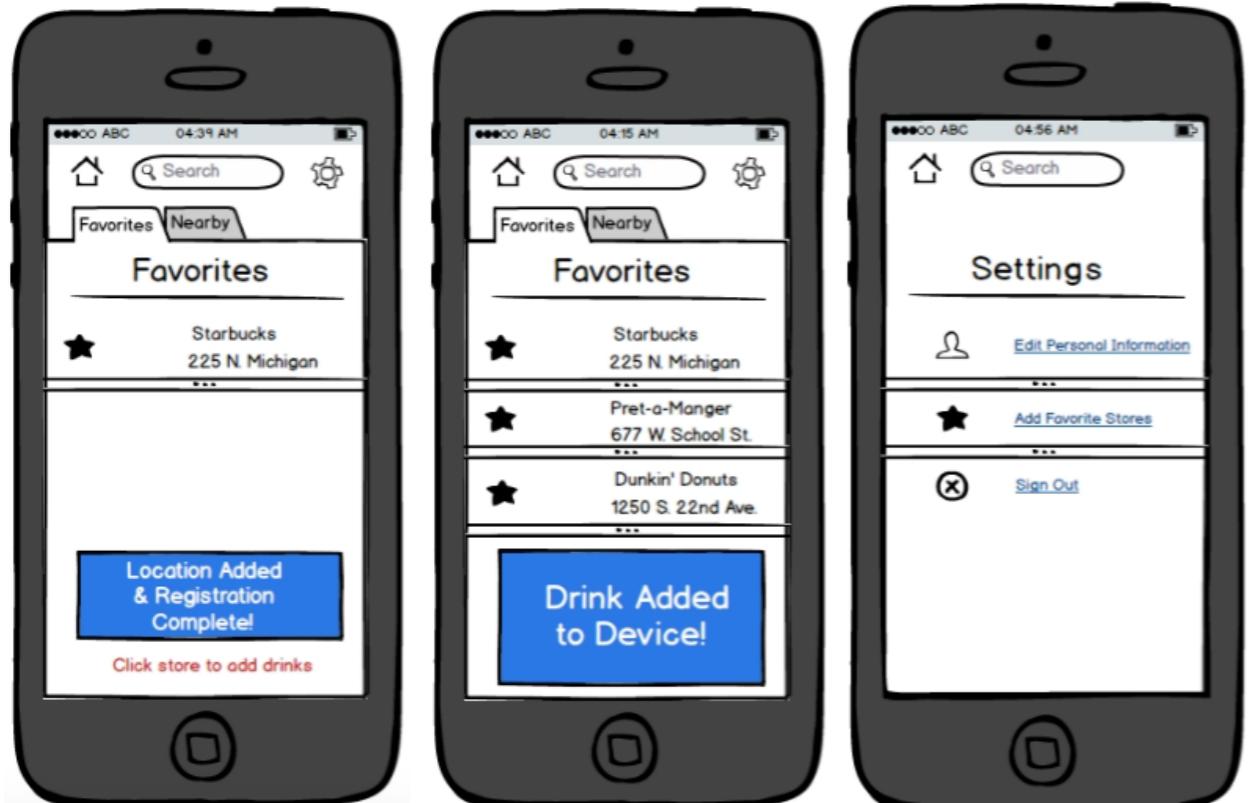
screens used in-class

- Feedback Received: too many coffee shop and drink options — paradox of choice for users

Digital Prototype
Phase 2

screens used during user testing

- added progress bar to registration screens

- significantly edited coffee shop landing pages

- added in feedback for users "Registration Complete" and "Drink Added to Device"

- built out settings screens to allow users to log-out

- FULLY CLICKABLE!

How the Design Features Addresses Unmet User Needs

1 Siobhan needs a way to order drinks in an efficient manner to decrease time she spends on her coffee runs.

> **Bean expedites the process from beginning to end — ordering without standing in line, receiving haptic feedback immediately when coffee is ready**

2 Siobhan needs a way to provide her beverage specifications in a clearly understandable manner to reduce errors in her drink order.

> **User has complete control of her own pre-set beverages and specifications from the app interface**

3 Siobhan needs a way to know about coffee shop menu items and promotional offers to so that she spends less time making decisions in-store.

> **App interface is continually updated with timely store menus, user can review prior to coffee run**

4 Siobhan needs a way to create a user profile so that baristas are able to spell her often misspelled name.

> **App interface stores Siobhan's details, created during first use of the system and stored in an easily accessible 'Settings' profile**

How the Design Features Addresses Unmet User Needs
continued

5 Siobhan needs a way to store her most frequently purchased beverages so that she doesn't have to re-order from scratch at each visit.

Bean stores Siobhan's pre-set favorited beverages and coffee shops

6 Siobhan needs a way to have the baristas begin making her order before she approaches the front of the line, so that she spends less time waiting for her beverage.

Siobhan's order is transmitted to her favorite coffee shop via Bluetooth Low Energy when she is within a set proximity (user must consciously send order)

7 Siobhan needs a way to be alerted when her beverage is ready so that she doesn't have to strain to hear her name called or stand in close proximity to other coffee shop patrons and employees.

Wearable wristband provides haptic feedback (vibration) to alert Siobhan immediately when her beverage is ready

8 Siobhan needs a way to integrate with all of the coffee establishments she frequents on weekdays and weekends so that she has a seamless experience at every coffee shop she visits.

Bean integrates with a multitude of establishments — user can choose their favorites to save within the system

Our Usability Testing Process

Goal: Intuitive/easy to operate at the first use.

Question: Once user has received preliminary instructions, will they be able to intuitively use the wearable?

Metric: The first time the user interacts with the wearable, it should take them less than 3 minutes.

How this will be tested: The user will receive preliminary instructions, they will then be timed when completing the order. The user should complete the order in 3 minutes or less and without any questions. Ideally, the faster the user completes the order, the better.

Physical Prototype

Task Scenario Prompt 1:

"Please power-on the wearable device and order an iced caramel macchiato. Let us know when you have successfully completed the order."

Required Steps to Complete Task:

- Touch power button to turn on device.
- Select preferred beverage by gesturing hand to effectively 'scroll' through pre-saved beverages.
- Touch 'SEND' to transmit/send order to coffee shop.

Physical Prototype

Goal: Intuitive/easy to interpret when coffee drink is ready on the first try.

Question: After the user has received preliminary instructions and receives haptic feedback from the wearable device, will they understand that their coffee beverage is completed and ready to pick up?

Physical Prototype

Metric: The user will pick up their drink within 1 minute of receiving haptic feedback from the wearable device.

How this will be tested: The user will have receive preliminary instructions prior to ordering. They user will be timed from the time they receive haptic feedback from the wearable to the time they pick up their ordered drink. The user should pick up their beverage in 1 minute or less and without any questions.

Usability Goals

GQM Set 2: Usability Test

Task Scenario Prompt 2:

"Please pick up your drink when you believe it to be ready."

Required Steps to Complete Task:

- Moderator simulated haptic feedback (vibration on the wrist of the user).
- User determines that vibration means their coffee is ready.
- User walks to counter to retrieve their beverage.

Physical Prototype
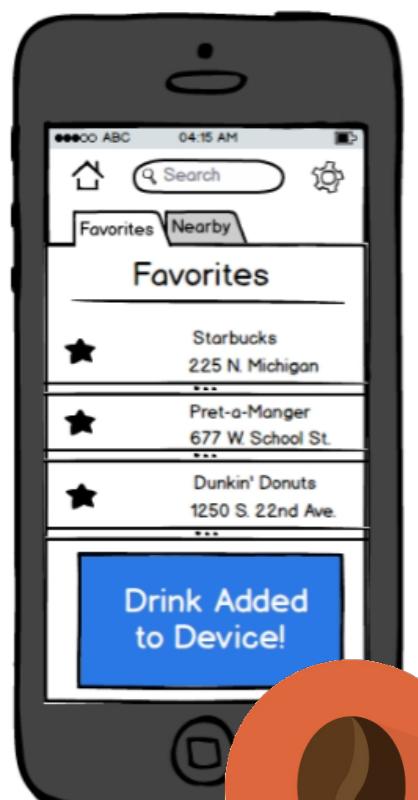
Goal: Intuitive/easy to create a new account.

Question: Without any instructions, will the user easily and quickly create a new account?

Digital
Prototype

Metric: Without any feedback the user should complete the account creation process within 3 minutes of starting it.

How this will be tested: The user will be timed from when they are asked to create a new account to when they have completed the account creation process. They should be done within 3 minutes of when they started.

Task Scenario Prompt 3:

"Please create a new account."

Required Steps to Complete Task:

• Tap 'Register Now!'

• Fill out account details. Tap next.

• Select favorite coffee shop from list.

• If a chain, select the proper location.

• Tap 'Save to Favorites.'

Digital Prototype

Goal: Intuitive/easy to favorite a preferred coffee drink.

Question: Without any instructions, will the user easily and quickly be able to navigate the digital prototype, find a preferred coffee drink, and add it to their favorites?

Metric: Without any instructions, the user should find and favorite a coffee drink within 3 minutes of starting their search.

How this will be tested: The user will be timed from when they are asked to find and favorite their preferred coffee drink to when they complete the task. They should be done within 3 minutes of when they first started.

Digital
Prototype
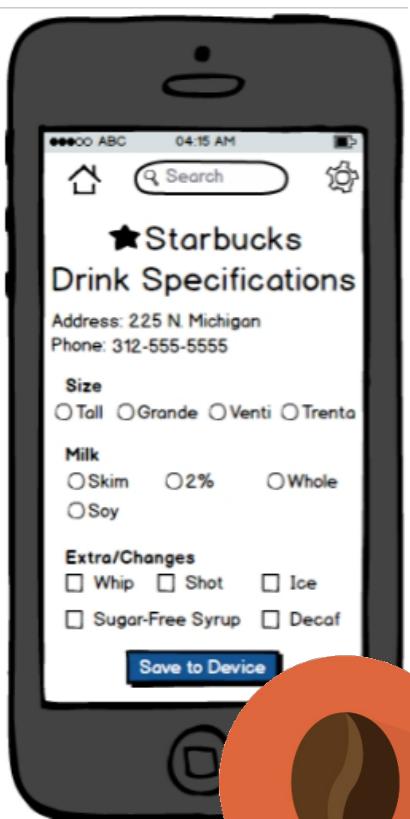
Task Scenario Prompt 2:

"Please order a Starbucks grande iced caramel macchiato with 2% milk and an extra shot of espresso and add it to your favorites."

Required Steps to Complete Task:

- Find Starbucks on the list of coffee shops.
- Find "iced caramel macchiato" within the cold beverages section of the menu.
- Enter in drink specifications: grande, 2% milk, extra shot.
- Tap 'Save to Device.'

Digital Prototype

Summary of Learnings from Testing
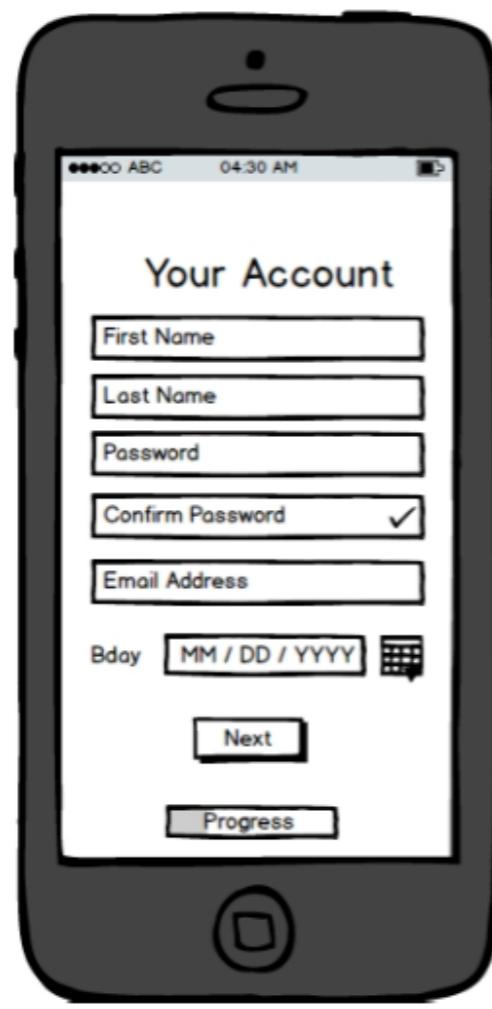
Digital Prototype Findings
Task 1

"Please create a new account."

✅ **6/6 participants fully completed the task**

Average time: 1 minute 15 seconds

Digital Prototype Findings
Task 2

"Please order a Starbucks grande iced caramel macchiato with 2% milk and an extra shot of espresso and add it to your favorites."

6/6 participants fully completed the task

Physical Prototype Findings
Task 3

"Please power on the device and order an iced caramel macchiato"

❌ **0/6 participants fully completed the task**

✅ **5/6 put the device on correctly**

✅ **5/6 turned the device on correctly**

❌ **0/6 ordered the correct drink**

Physical Prototype Findings
Task 4

"Please pick up your drink when you believe it is ready."

✅ **5/6 participants completed the task**

Next Steps for Bean

Next Steps for Bean

1 Projection on user's hand to be sensitive to touch.

2 Include an area in the app to view saved favorite drinks—more than just within the wearable.

3 Include packaging that explains functionality of the Bean system.

4 Integrate with user's social networks to expedite sign-in and invite friends to join them on a coffee run.

5 Leverage GPS functionality and pulsing indicator dot within map to alert users to their location in proximity to nearby coffeeshops.